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ABSTRACT

In fulfilling their mission to provide services to diverse groups, community colleges often find that their retention rates suffer as a result. Current research reviews the theoretical basis of retention, focusing on how it pertains to two-year schools in particular. Numerous variables influence persistence, and there is some support for educational objectives as important determinants of persistence at community colleges. This study examines which student characteristics best predict retention and student outcomes at two community colleges, using regression techniques. Fall 1997 cohorts--1,844 FTIC (first-time-in-college students) from Collin County Community College District (CCCCD) in Texas, and 1,137 FTIC from Richland Community College (RCC) in Illinois--were tracked until spring 2001 and utilized to test the hypothesis that educational objectives are critical in predicting community college retention. For CCCCD, roughly 66% of the original cohort remained by spring 1998. By fall 1998, 46% were retained. Virtually all who left said that their educational goals were not known, and that they were unemployed. RCC had a 49% retention rate by spring 1998, and a 29% rate by fall 1998. For both schools, there was a higher first semester grade point average among the fall-to-spring persisters. Persisters also tended to pass the placement test and be younger. (Contains 51 references, 6 tables, and 2 figures.) (NB)

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Educational Objectives and Retention at Two Community Colleges

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1

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Abstract

In their mission to provide services to diverse groups, community colleges generally have lower retention rates. The present research reviews the theoretical basis of retention, focusing on how it pertains to two-year schools. Numerous variables influence persistence and there is some support for educational objectives as important determinants of persistence at community colleges. This study examined which student characteristics best predict retention and student outcomes at two community colleges using regression techniques. Fall 1997 cohorts were tracked until Spring 2001 and utilized to test the hypothesis that educational objectives are critical in predicting community college retention. The findings indicated a need for improvements in the quality of student intent data collected as well as a refocusing of College resources.

Educational Objectives and Retention at Two Community Colleges

The preparation levels of college entrants and their rates of degree completion have been decreasing in recent years. A growing proportion of four-year college entrants come from community colleges (Tinto, 1998). Recent societal transitions in ethnic, cultural, and economic diversity are rapidly affecting community colleges, in particular. Texas, especially, has experienced one of the highest gains in minority enrollment (Burr, Burr, & Novak 1999). Community colleges frequently function as a safe harbor for under-prepared students to pursue higher education. The students who typically attend a two-year college tend to be older, of minority status, less academically adept, part-time, employed commuter students who may be attending for a variety of reasons other than degree completion e.g. job related reasons, personal enrichment, transfer to a four-year institution, etc. (Dougherty, 1992; Nora, 1987; Sandel & Sydow, 1997; and Voorhees, 1987). Remedial courses, which may be required, often lengthen the chances of goal attainment and discourage them from completing programs. Also, their rather full lives frequently prevent them from completing the term they enroll in, and many of the reasons why they leave are beyond the institution's control (Bers & Nyden, 2001). In fact, over 50% of community college students leave during or after the first year (Tinto, 1993).

It is not surprising that such behavior has traditionally been associated with lowered rates of retention, transfer, and baccalaureate attainment (Astin, 1975). From his examination of three different national surveys, Dougherty (1992) estimated that about 70% of four-year college entrants received a baccalaureate compared to only 26% for two-year college entrants. Tinto (1993) has stated that attrition may cause students to lose present and future income, and may lead to greater frustration and a poorer self-concept.

Thus, community colleges appear to be inherently different in their institutional characteristics from four-year institutions. They are open to everyone and are a place for all to experience success. In their mission to provide services to a diverse group of individuals, community colleges are susceptible to high rates of student attrition. There seems to be more of a tendency to go straight through at four-year schools versus eventual success at community colleges. In light of this, factors influencing retention at community colleges are likely to be even more complex, involving many behavioral and environmental factors, and somewhat different from those at a four-year institution. Thus, the manner in which retention issues are handled at community colleges should be different and related to their unique institutional characteristics.

The primary role of two-year colleges has been changing from a pathway to four-year institutions to a community-learning center. There has been increasing interest in indicators of institutional effectiveness and implementation of performance indicators that are tied to funding mechanisms (Voorhees & Zhou, 2000). Because of intrinsic differences between community colleges and universities, such indicators pose challenges for two-year institutions. For accountability and financial reasons, it is important for institutions to understand enrollment trends and why students leave (Cabrera, Castaneda, Nora & Hengstler, 1992; Luna, 1999; Pascarella & Terenzini, 1991; and Tinto, 1975).

Theoretical Basis of Student Retention

The most comprehensive theoretical frameworks on student persistence decisions have been Tinto's (1975; 1987; 1993) student integration model, Bean's (1980; Bean & Metzner, 1985) model of student departure, and Astin's (1975) theory of involvement. Of these, the most frequently used framework has been Tinto's longitudinal model, which

draws on Durkheim's (1951) theory of suicide and the role that social structure plays in persistence (Spady, 1971). He sought to explain college student departure by a number of background or pre-entry variables (race, high school academic record, parental SES, skills/abilities etc.), which interact with initial institutional commitment and educational goals. These are modified through formal/informal academic and social integration with the campus community over time. Successful integration leads to satisfaction, which in turn leads to increased subsequent institutional commitment and intent to persist. Departure from college occurs as the result of a poor fit between the student and academic institution.

The research has been largely supportive of Tinto's model and has resulted in a more complete understanding of a complex phenomenon over the last 25 years (Braxton, 1999; Pascarella, Smart, & Ethington,1986). However, this knowledge has been largely limited to four-year institutions individual institutions, and generally not been longitudinal in nature (Pascarella, et al., 1986). Bean's model, based on organizational turnover, postulates that the dropout decision depends indirectly on student background characteristics, which directly affect academic and social integration and environmental influences. A smaller role is attributed to social integration; a larger role is attributed to environmental variables than in Tinto's theory. Astin's input-process-output model is one of the earliest college impact models and was the basis for his theory of involvement which postulates that students learn by becoming involved. He suggested that we need to examine the degree of exposure to college, time of exposure, intensity of exposure, and frequency of interaction with peers and faculty (Astin, 1993). Thus, as with Bean's work, environmental variables are stressed more.

Some researchers have attempted to merge several of these approaches in order to increase our understanding of student persistence. Cabrera (1992) and Thomas (2000) suggested that although Tinto's model is useful, there is a lack of control for external variables. Bean and Metzner's (1985) model stresses the influence of experiences within and outside the institution. Both models view persistence as a complex set of interactions over time, precollege characteristics as affecting adjustment to college, and the import of a match between the student and institution. Cabrera proposed that a model integrating the leading factors in each theory might better contribute to the explanation of persistence, since both provided unique insights but also measured similar constructs. Pascarella (1980; Pascarella & Terenzini, 1991) posited the import of informal contact with faculty and its indirect effect on persistence. This included a more explicit consideration of the institutional environment and its characteristics and was more amenable to multi-institute studies. Milem and Berger (1997) illustrated the relationship between Astin's theory of involvement and Tinto's theory of departure and stated that early involvement with other students as well as faculty appears to increase retention.

Factors Associated with Retention

An operational definition of student retention usually involves enrollment during consecutive semesters and examining student outcomes such as degree attainment at departure (Lenning, Beal, & Sauer, 1980; Seidman, 1999). It can also be viewed as course or program retention. There are four types of students when considering retention: stopouts, dropouts, persisters, and attainers (Lenning et al. 1980). These outcomes (e.g. graduation rates, transfer rates, good standing, employment status, goal attainment) can differ for community college students because of their diversity and tendency to stopout

and return, thereby taking longer to complete programs/goals (Pascarella et al., 1986; Webb 1988).

Numerous variables appear to affect retention and the nature in which they do so is complex. Pantages and Creedon's (1978) review of 25 years in research on college students identified the following variables as being related to attrition: demographic, academic, motivational, personality, college environment, financial, and health. Lenning, et al. (1980) have also reviewed the extensive literature with similar results. Tinto's (1975) review of the literature, model development, and subsequent modifications (Tinto, 1987) has provided the most widely used theoretical foundation to account for college student departure. Research during the eighties largely tried to validate this person-environment fit model. For example, Astin, Korn, and Green (1987) looked at the relationship between dropping out and psychological variables such as attitudes, intentions, expectancies, and academic self-concept. However, while psychological variables were integrated into explaining dropout behavior, the behavior was not explained in terms of a psychological process experienced by leavers. Mashburn (2001) sought to test a dropout model adopted from a model of the psychological process underlying employee turnover. The results of factor analysis suggested that thoughts of quitting, search intentions, and dropout intentions were components of a higher-order factor (withdrawal cognitions). Thus, the relationship between student satisfaction and dropout is mediated by withdrawal cognitions.

More recently, Malette and Cabrera (1991) have suggested that most studies on the student integration model have found that precollege ability and background factors exert no significant direct effects on retention. Research has found background variables

to influence, at most, initial goal and institutional commitment and to some extent academic/social integration (Nora, Attinasi, & Matonak, 1990). A study by Volkwein and Gerken (2000) suggested that freshman year experiences are more important in explaining outcomes than precollege characteristics, with the exception of GPA, which is almost equally predicted by precollege and college variables. Braunstein, McGrath, and Pescatrice (2001) found that academic performance was overwhelmingly the most significant factor affecting a freshman's decision to continue, as the poor performing students tended to dropout. Peltier, Laden, and Matranga (1999), in their review, indicated that background variables such as being White or Asian American have been associated with persistence; being older interferes with persistence i.e. more commitments outside of school; and the findings have been mixed with respect to gender with some support for higher persistence rates for females (Astin, 1993). Peltier et al. (1999) state that factors such as on-campus living have a more significant influence on persistence because students are strongly affected by faculty and peers (Astin, 1993; Pascarella, 1985). Lewallen (1993) added that full-time enrollment and on-campus living are positively associated with persistence. More, specifically, Thomas (2000) found that the broader the network of social ties and interaction with other students with broader ties led to increased persistence. These experiences may be particularly beneficial for high-risk students (Thompson, Samiratedu, & Rafter, 1993).

Desire to finish college may be seen as a form of goal commitment and is significantly related to retention (Astin, 1975). Allen (1999) looked at precollege background variables, motivation, and persistence behavior among minorities and nonminorities by addressing major assertions from the literature: 1) background variables

strongly affect persistence; 2) desire to finish college affects persistence; and 3) existing models are unique to nonminorities (Pascarella & Terenzini, 1980). He did this using the CSI from Noel-Levitz and discovered that background variables, desire to finish college, and financial aid played key roles in persistence. Although there was no difference between minorities and nonminorities with respect to precollege variables, there was a significant relationship between magnitude of motivation and minority persistence.

In another study, students entering West Virginia State College in Fall 1996 but not enrolled in Spring 1997 were surveyed regarding reasons for leaving, the role the college could have played or could play in their educational needs, and if they were planning to return (West Virginia State College, 2000). Reasons cited were: work/home/school factors; couldn't get classes they needed; financial aid; and health problems. The majority (62%) of the students planned to return and could be considered stopouts. In a similar vein, Bonham and Luckie (1993) asked nonreturnees if they had completed their educational goals and whether they planned to return. Only 11 out of 399 students indicated that they had not accomplished their goals and 303 perceived themselves to be stopouts. Finally, due to unavailable data, retention studies have generally lumped together different types of persistence behavior. Porter (2000) differentiated between stopout, transfer-out, and persistence behavior using the NSLC database. Using logistic regression, Porter concluded that using a three-outcome dependent variable affected the statistical significance of explanatory variables as well as their impact.

Unfortunately, until recently, the extensive literature on retention or persistence research had not focused at the community college level. Traditional models don't

necessarily apply to the rapidly shifting and diverse population attending community colleges and studies using these models for two-year colleges have been able to account for only a modest amount of variance associated with persistence rates (Voorhees, 1987). These colleges are not able to integrate their students into institutional academic and social life as well as four-year schools, since it is often difficult for students to be as involved academically and socially. Tinto (1990; 1993) has suggested that the classroom is then the main vehicle for improving student learning and persistence through co-operative learning, frequent feedback, and increased involvement. Therefore, traditional models can provide a template for theory elaboration and hypothesizing models that are more appropriate for community colleges. Despite the progress that has been made in understanding the nature of retention, we still need to improve on the existing knowledge, especially with respect to community colleges. According to Voorhees (1987), community colleges are lacking a student persistence model specifically designed for them, which can adequately account for student background and how students interact with the environment.

Retention and Two-Year Colleges

Nippert (2000) examined the effects of student background, academic/social integration, external influences, and institutional satisfaction on the educational attainment of two-year college students by using multiple regression procedures on data from a CIRP survey. The following variables contributed significantly to explaining educational attainment: sex (females had a higher rate); high school academic record; college academic activities; college GPA; work status; and choosing to re-enroll. She concluded that it may be better to focus retention efforts on placing greater emphasis on

academic integration rather than social through increased opportunities for faculty and student interaction e.g. orientation, mentoring, etc.

Academic and social integration appear to be more important to persistence at four-year colleges than two-year colleges. Student time on two-year campuses is generally limited and the academic setting becomes increasingly important (Tinto, 1990). Also, community college students may have a greater variety of experiences outside of class (e.g. job, family, etc.) and attend only part-time. Tinto stresses that involvement in class becomes the main vehicle for student involvement beyond the classroom and that this involvement matters most during the first year.

Voorhees (1987) conducted one of the few early studies, where he administered a locally constructed student opinion survey, reflecting concepts previous research had shown to be important in explaining persistence, to a sample of students enrolled in Fall 1984 at a suburban community college. He found little evidence of gender differences, but part-time students were likely to be older, have commitments outside the college, and likely to dropout, and there was considerable variation in minority persistence. Furthermore, persistence was a function of gender, purpose for enrollment, and intent to return. Satisfaction, which has been positively related to student retention (Bean, 1980), was relatively unimportant, perhaps because the sample was not comprised of just FTIC students.

Factors influencing attrition at community colleges fall into three categories: 1) sex, age, race, and other demographics, 2) academic performance as measured by high school GPA, college placement scores, and 3) noncogitive factors such as social integration, motivation, and self-esteem (Romano, 1995). It has been difficult to identify

early leavers and design intervention strategies to retain them. From his effort to examine this using multiple regression, Romano found that leaving was associated with: financial aid, high school GPA, reason for attending, certainty of career choice, college degree program, academic action (probation or not), and strength of desire for additional education. The seven variables accounted for 74% of the variance. The author cautions that his sample may have been lacking in ethnic diversity. Webb (1988) sought to identify variables that would suggest a model of retention/attrition for two-year colleges and conducted one of the most comprehensive longitudinal studies of community college students with an ethnically more diverse group and was able to account for only 21% of the variance using precollege variables. This increased to 31.5% after two post-enrollment variables were added: first semester GPA and number of courses passed. Sandel and Sydow (1997) conducted a telephone survey regarding reasons why students leave. They found that more females withdrew (inconsistent with Voorhees, 1987) and that older students were more likely to withdraw. Work and family obligations, varying educational goals (e.g. earn degree/certificate, transfer, job-related, personal interest), lack of goal and academic preparation, student-faculty relationships were the main reasons students left. Nora (1990) found that Hispanic students left largely due to finances.

Clagett (1996) used logistic regression to identify correlates of retention and used a more elaborate (e.g. transfer, award, good standing, persistence, personal achievement, etc.) student outcomes typology suitable for a community college just as Pascarella et al. (1986) had recommended. This emphasis on outcomes reflects a move towards focusing on what students learn as a critical indicator of quality (Dietsche, 1995). This is

particularly important for community colleges. Clagett found that Asian Americans and Whites achieved at a higher rate, while students needing developmental education achieved at a lower rate. Cumulative GPA was the best explanatory variable followed by summer session attendance, and to a lesser degree, such variables as credit hours and first semester GPA. Clagett recommended an intensive support system for the at-risk student. Similarly, Hoyt (1999) in a study at a large, urban community college found that first semester GPA had a strong relationship with student retention. The high remedial population of the college may have increased dropout rates and affected GPA. The need for remedial education at community college has been shown to increase a student's risk of dropping out (Clagett, 1996; Voorhees, 1993). Financial aid (supported by Dubrock, 2000) and minority status also influenced retention.

Persistence research has traditionally not been longitudinal in nature (more valid for community colleges, since students need to be followed for a sufficient period of time due to their stopping out, etc.) nor has it been conducted on multiple institutions (Pascarella et al., 1986). Longitudinal studies, though demanding and complex, are more likely to provide more valid information (as opposed to autopsy or cross-sectional designs). Consequently, Pascarella et al., using Tinto's (1975) model, examined the responses of 825 FTIC degree-seeking students from 85 two-year institutions from Fall 1971 to 1980 using CIRP surveys. The two variables with the most consistent pattern of significant positive effects on degree persistence and degree completion were academic and social integration, thereby supporting Tinto's model. However, Nora (1987), in his study of Hispanic students, found that institutional/goal commitments not only had a significant direct effect on retention rates, but were considered more important in

determining retention than academic/social integration. In light of these contradictory findings, Nora recommends that future research in retention should examine differences among various student populations.

Student Intent and Retention at Two-Year Colleges. Thus, numerous variables appear to affect persistence and conflicting evidence exists with respect to the relationship between variables such as gender, age, ethnicity, educational goals, need for remediation, GPA, part-time/full-time status, credit hours and retention rates. Due to the complexity of the retention phenomena, studies utilizing a theoretical framework and evaluating relationships among several variables simultaneously offer greater insight. Furthermore, goal attainment at community colleges cannot be understood independently from student intent, which is wide-ranging, however this has been little researched. This has led to erroneous conclusions regarding the quality and effectiveness of two-year schools.

Based on the above review, the following research/theoretical constructs were of particular interest and importance in the design of the current study on the retention of community college students: Lenning et al.'s (1980), Voorhees' (1987), and Allen's (1999) emphasis on background variables and aspirational/motivational factors, which include level of degree aspiration, transfer plans, commitment, peer-group influence, vocational and occupational goals, and satisfaction vs. dissatisfaction; growing emphasis on outcomes and the relatively strong, direct effect of a student's desire to complete a program (Dietsche, 1995); and the influence of precollege variables and GPA in student involvement and persistence (Astin, 1993; Pascarella & Terenzini, 1991; Romano, 1995; and Webb, 1988).

There appears to be some support for educational objectives/degree commitment as being an important determinant of persistence, especially at the community college level. The present research was an attempt at examining the nature of retention at a suburban, multi-campus community college and an urban single campus community college. The purpose of this study was to determine which student characteristics best predict retention and student outcomes such as transfer to a four-year college, degree/certificate completion, employment, and good standing using exploratory stepwise multiple regression and logistic regression techniques. A Fall 1997 FTIC cohort was tracked until Spring 2001 in order to test the hypothesis that student intent is an important predictor of student success and retention at the community college level.

Methodology

Sample

A cohort of 1,844 FTIC enrolled during Fall 1997 were obtained from the Collin County Community College District (CCCCD) database and 1,137 FTIC enrolled during Fall 1997 were obtained from the Richland Community College (RCC) database, which house information on student backgrounds, characteristics, interactions with the academic and social systems of the college, as well as some of the student outcomes (e.g. GPA, enrollment status) data. The THECB provided the within Texas transfer and employment data for CCCCD (current to Fall 1999). ICCB provided the Illinois transfer data (current to Fall 2000). Thus, information on out-of-state and private institutions was not available at this time. CCCCD is a moderate size, suburban, multi-campus institute, while RCC is of smaller size and predominantly a single campus community college.

Procedure

This Fall 1997 cohort was followed each Spring and Fall until Spring 2001. A 1 was assigned if the student was enrolled during a subsequent term; a 0 if they were not enrolled. Students were identified as persisters, dropouts, those in good standing, transfers, employed, or graduates. Based on previous research and the nature of the data available from the College databases, student characteristics variables were selected (see Table 1). The quality of the educational objectives or student intent variable was poor, since it was based on student self-report at college entrance, and students tended to select the "Not Known" category. High school GPA, initial degree/major, and financial aid were some variables of interest, but their corresponding fields did not appear to be populated as yet in the database. Dummy variables were coded for all nondichotomous variables to prepare the data for stepwise multiple regression as well as logistic regression.

Data Analysis

Frequency distributions and descriptives (see Table 2) were calculated for Fall 1997 for the cohorts. The characteristics of students who left during Spring 1998 and Fall 1998 were also examined. The number and percentages for Fall 1997 to Spring 1998 retention, Spring 1998 to Fall 1998 retention, etc. were determined (see Table 3 and Figures 1 & 2).

Also, in order to examine the contributions of multiple independent or predictor variables to the dependent variables (e.g. retention, good standing, university transfer, employment (not available for RCC), and award) exploratory stepwise multiple regressions were run using the independent variables: gender, age, part-time/full-time

status (an indicator of contact), educational objective, ethnicity, employment status, placement test status, residency status, and first semester GPA (see Tables 4 & 5). When a large number of independent variables are thought to influence a dependent variable, as was the case here, stepwise multiple regression techniques are suitable for finding the highest squared multiple correlation (R squared) using the fewest number of independent variables. This is a hierarchical model and allows the data to dictate the order of the predictors. Such multivariate statistics are reasonably robust with respect to violations of assumptions e.g. multicollinearity. Inspection of the correlations between the independent variables, and regressing each independent variable with the others indicated that multicollinearity was not a significant problem. Even though many of the studies cited earlier used multiple regression techniques, based on feedback and some of the other studies, logistic regressions were also run on these data (see Tables 6 for the analysis from Spring 1998 to Fall 1998). Logistic regression is more suitable for dichotomous dependent variables, since a linear relationship between the dependents and independents is not assumed. Chi-square, -2 Log Likelihood, and Exp (B) were used to assess the significance of associations between variables. The Wald statistic was utilized to test the significance of individual logistic regression coefficients for the independent variables. Unlike multiple regression, logistic regression calculates changes in the log odds of the dependent, not changes in the dependent itself.

Results

The profile of the initial cohort was as follows: roughly equal distribution of males and females at CCCCD and a slightly greater proportion of males at RCC; greater number of full-time students at CCCCD and more part-time students at RCC; largely in-

district residency status; educational objectives mostly not known but 299 students hoped to transfer and 133 had degree/certificate aspirations at CCCCD and at RCC 391 and 261 students with transfer or personal intent, respectively; mostly White; largely unemployed at CCCCD, but employed at RCC. On average, RCC students had a higher first semester GPA, were older, and attempted fewer hours than CCCCD students.

For CCCCD, by Spring 1998, 1,219 of the initial cohort remained-a 66% retention rate. Virtually all of the ones who left had indicated that their educational objective was not known and were unemployed. Also of interest was the higher first semester GPA of the Fall to Spring persisters (Mean=2.34, SD=1.22). By Fall 1998, 844 students were retained (45.8%). Again, virtually all of the students who left had indicated that their educational objective was not known and were unemployed. The Fall to Fall retention group's first semester GPA was also higher (Mean=2.33, SD=1.23). In addition, the majority of those who had passed the placement test persisted, as did the many of students from the cohort who had stated specific educational objectives e.g. transfer, degree/certificate). This trend continued until Fall 2000 (just beyond 150% of completion time and about 11% of the initial cohort was retained) and Spring 2001 (about 11% of the cohort was retained).

A closer examination of the characteristics of the CCCCD students who left by Spring 1998 suggested that the majority did not leave in good standing (Mean first semester GPA=1.0, SD=1.41), transfer, earn an award, or pass the placement test. More of this group tended to be older and part-time. The majority, over 80%, however, did find employment. This pattern held for those who left by Fall 1998, with the exception of a somewhat higher GPA. But by Fall 2000, three years later (or within 150% of completion

time), not only was the first semester GPA of the leavers somewhat higher, more of them were in good standing, more were full-time and younger students, as well as a greater proportion had failed the placement test. The majority (77%) still found employment. Overall, less than 2% graduated, 43% left in good standing, and about 7% had transferred (transfer data was only available until Fall 1999).

For RCC, by Spring 1998, 535 of the initial cohort remained-a 49% retention rate. Leavers had indicated a variety of intents, were older, tended to not pass the placement test, were employed, and left in good standing. Also of interest was the higher first semester GPA of the Fall to Spring persisters (Mean=2.76, SD=1.08). By Fall 1998, 333 students were retained (29%). Again, the leavers had indicated a variety of intents, tended to not pass the placement test, were employed, older, and left in good standing. The Fall to Fall retention group's first semester GPA was also higher (Mean=2.91, SD=.97). This trend continued until Fall 2000 (just beyond 150% of completion time and about 17% of the initial cohort was retained) and Spring 2001 (about 15% of the cohort was retained) when only 7 and 31, respectively, of the 1,347 students who had initially indicated they did not know their educational objective remained, while the majority who came to earn an award or transfer or had passed the placement test remained.

A closer examination of the characteristics of the students who left RCC by Spring 1998 suggested that the majority did leave in good standing (Mean first semester GPA=2.61, SD=1.37). More of this group tended to be older and had not passed the placement test. This pattern held for those who left by Fall 1998, with the exception of a somewhat lower GPA. But by Fall 2000, three years later (or within 150% of completion time), not only was the first semester GPA of the leavers somewhat higher, more of them

were in good standing, more were younger students, as well as a greater proportion had failed the placement test. Overall, less than 14% graduated, 63% left in good standing, and about 25% had transferred.

For the stepwise regression using Fall 1997 to Spring 1998 retention as the criterion, first semester GPA was selected first, followed by placement test status, and part-time/full-time status. These variables accounted for 30% of the variance associated with Fall to Spring retention. For Fall 1997 to Fall 1998, placement test status was entered first, followed by first semester GPA and these predictors accounted for about 23% of the variance associated with retention. In both cases, additional variables contributed little. This pattern generally holds for Fall 1997 to Spring 1999 through Spring 2000, but with educational objectives (not known, intent to transfer, intent to earn an award) playing an increasing role in predicting retention. By Fall 2000, about 61% of the variance associated with retention can be accounted for by the educational objectives predictor variables. By the Spring 2001 term, the variance predicted by educational objectives was reduced to 36%.

Of the outcome measures for CCCCD, employment status had a significant, negative, and moderately high correlation with Fall 1997 to Fall 1998, Spring 1999, Fall 1999, and Spring 2000 retention (last semesters that THECB data is available) and low but significant correlations with not knowing the educational objective, intent to transfer, and passing the placement test. Nine predictors accounted for about 45% of the variance associated with the employment status dependent variable; however, the bulk of this variance could be accounted for by Fall 1999 retention (entered first) and Fall 1998 retention (entered second). First semester GPA, passing the placement test, and age were

entered in that order and accounted for 22% of the total variability associated with good standing. Although the F-statistic was significant for the predictors of degree/certificate completion as well as transfer to four-year institutions, the proportion of the total variance explained by them was negligible.

For the RCC stepwise regression using Fall 1997 to Spring 1998 retention as the criterion, first semester attempted hours was selected first, followed by placement test status, other and transfer intent, age, and first semester GPA. These variables accounted for 23% of the variance associated with Fall to Spring retention. For Fall 1997 to Fall 1998, attempted hours were entered first, followed by first semester placement test, GPA, personal intent, and being White, with these predictors accounting for about 18% of the variance associated with retention. In both cases, additional variables contributed little. This pattern generally holds for Fall 1997 to Spring 1999 through Spring 2002, but with a decreasing amount of the variance being accounted for. By this time, the number of students retained was very small.

Of the outcome measures for RCC, nine predictors accounted for about 40% of the variance associated with the award status dependent variable; however, the bulk of this variance could be accounted for by Spring 1999 retention (entered first) and Spring 2000 retention (entered second). First semester GPA and personal intent mainly accounted for 22% of the total variability associated with good standing. Although the F-statistic was significant for the predictors of transfer to four-year institutions, the proportion of the total variance explained by them was smaller (17%), with personal intent accounting for most of that variance.

Along lines similar to the stepwise regression results, the logistic regression analyses for CCCCD showed that first semester GPA and passing the placement test, and attempted hours were related to the odds of being retained in Spring 1998. This was the case for Fall 1998 too, except unknown intent and employment status were replaced by attempted hours. This trend continues until Spring 2001, but with age, intent (unknown), part-time status, and passing the placement test playing an increasing role in the odds of being retained.

For the CCCCD outcome measures, first semester GPA, age, job intent, being employed, and passing the placement test were related to the odds of leaving in good standing. First semester GPA, age, job intent, and passing the placement test were related to the odds of being employed. First semester GPA, gender, and earned hours were related to the odds of earning an award. First semester GPA, age, transfer intent, and passing the placement test were related to the odds of transferring to a four-year institution.

Again, similar to the stepwise regression, the logistic regression analyses for RCC indicated that other and transfer intent, passing the placement test, first semester GPA, part/full-time status, age, and attempted hours were related to the odds of being retained in Spring 1998. This was the case for Fall 1998 too, except the coefficients for intent and part/full-time were no longer significant. This trend continues until Fall 2000, but after that the independent variables generally do not play a significant role in the odds of being retained.

For the RCC outcome measures, first semester GPA, gender, Spring 1999, Fall 2000, and Spring 2001 retention were related to the odds of leaving in good standing.

Retention, job intent, first semester GPA, and part/full-time status were related to the odds of earning an award. First semester GPA, age, transfer, job, and other intent were related to the odds of transferring to a four-year institution.

Discussion

This study was an initial attempt to use a longitudinal approach and a more elaborate outcomes typology to study retention, since this is thought to be more appropriate for community college students who epitomize diversity (Clagett, 1996; Pascarella et al., 1986). The Mean first semester GPA tended to be higher for persisters. Persisters also tended to pass the placement test and be younger, as opposed to the leavers or the at-risk group. Early identification and intervention with groups using these types of predictors might be helpful. It would be also help to survey this group regarding how the college could have assisted them better with their educational goals and if they intend to return. It became evident that the quality of the educational intent data needs to be improved so as to more accurately identify students with various intents. Too many students at these colleges chose the unknown, other, or personal category. Although transfers tended to be students who intended to transfer, things were less clear for the other types of intent. The students generally left in good standing. There were also no significant effects of ethnicity, since Whites greatly outnumbered minority groups for this sample (like Romano, 1995).

Other findings generally supported previous research that more than 50% of community college students leave after the first year (Tinto, 1993), since this was the case for both colleges. First semester GPA appeared to play a significant role in predicting this retention, as did placement test status (Clagett, 1996; Hoyt, 1999;

Romano, 1995; Voorhees, 1987; Webb, 1988). For CCCCD, although this trend generally continued over subsequent semesters, by Fall 2000, the educational objectives independent variables played an increasing role. Thus, after 3 years, the students who remained tended to be those who had indicated intent to earn an award or transfer to a four-year institution. Virtually all the students who had said they did not know why they were at college had left. The data for RCC indicated the importance of placement test scores, attempted hours, and first semester GPA in retention. Intent was more important during the first three semesters. Despite, the problematic nature of the data, where the majority self-reported that their intention for attending college was unknown, the findings suggest some support for previous research suggesting desire to finish college or initial goal commitment appears to be significantly related to retention (Allen 1999; Astin, 1975; Pascarella & Terenzini, 1980). Tinto (2000), at his workshop, suggested that students be asked their intent at entry. We need to improve the quality of data we collect from students if we are to gain a better understanding of factors influencing outcomes. It would be also be helpful to collect their intent and the degree to which goals are met, as well as the degree of satisfaction at several points and when they exit.

Of the remaining outcome measures, first semester GPA, passing the placement test, age, credit hours and to some degree intent appeared to be important for earning an award, transferring, employment (CCCCD only). Degree/certificate completion and transfer were perhaps inadequately predicted, since cohorts need to be tracked for at least six years at the community college level to account for the complex nature of the typical community college student who may stopout, attend part-time, work, have numerous other obligations, etc. Then perhaps, the information from all these outcome measures

could be combined to give a more complete picture of student success. Furthermore, other predictors that were not available at this time (high school GPA, financial aid, degree/major information) may have added to our knowledge of student outcomes and retention. The effect of student-faculty interaction was only indirectly looked at via credit hours, and student satisfaction, which represents the student's subjective experience, was not examined. Although it is difficult to be exhaustive, these variables could help us account for more of the variance associated with student retention. A survey and/or focus group may help us get a better understanding of the student voice and shed more light on why they leave and the quality of their experience. It might also let them know the value the college places on their experiences.

Despite the fact that this type of research (as is the case with much of the research involving human behavior) is fraught with methodological pitfalls, this study found some support for the greater role academic integration (GPA, hours attempted), placement tests, and student educational objectives play at two-year colleges in the prediction of several measures of student outcomes and retention. When looking at these phenomena, the numerous variables, which come into play, directly and indirectly, might explain some of the inconsistencies across studies.

Future research may better deal with this complexity by using more sophisticated analytical techniques, ones that could better handle non-binary dependent variables. It may be helpful to get at direct, indirect, and total effects using path analysis. It would also be of interest, albeit complex, to track individual student behavior and student outcomes.

It is also important to note that the majority of students at both colleges appear to be leaving and not returning. A relatively small percentage is transferring, completing degrees or certificates, and persisting. Tinto suggested that we need to improve the quality of the educational experience and the students will stay. Thus, we need to improve orientation, early alert programs, assist those with undecided goals with goal clarification, improve instruction and curriculum, as well as improve all levels of student support and services. Essentially, a reallocation of College resources is necessary.

Instead of merely focusing on whether they leave or stay, we need to demonstrate that our students are eventually successful and facilitate this process (Desjardins & Pontiff, 1999). With the increasing emphasis on what the student learns and the import of academic experiences at the community college level, we need to focus on variables that are controllable e.g. classes, instruction, and student/faculty involvement. In order to accomplish this, and meet diverse student needs, CCCCD has implemented such things as learning communities and service learning. The college has been recognized for its efforts with its Learning Communities and Service Learning programs. RCC is in the process of implementing Academic Improvement Quality Project (AQIP) principles, an alternative form of accreditation that emphasizes continuous quality improvement throughout the College. Also, Developmental programs at both colleges provide extra encouragement for remedial students. Yet another innovative approach has been increasing high school and university partnerships. For example, the interest of community college students in transferring is frequently dampened when they are drawn into occupational programs. These agreements with four-year institutions should help motivate students to transfer and positively affect intent to transfer. Such approaches,

taken together, should increase the success rate of our students during the coming years. It will be interesting to assess the impact of such programs on the success of current and future students.

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Table 1. Variable Names and Descriptions

Variable Name	Description
Gender	Coded 1 if female, 0 if male
Part-time/Full-time Status	Coded 1 if Full-time, 0 if Part-time
Ethnicity:	
White	Coded 1 if the student was White, otherwise 0
Black	Coded 1 if the student was Black, otherwise 0
Hispanic	Coded 1 if the student was Hispanic, otherwise 0
Asian	Coded 1 if the student was Asian, otherwise 0
Residency Status	Coded 1 if the student was in-district, otherwise 0
Employment Status	Coded 1 if the student was employed, otherwise 0
Placement Test	Coded 1 if the student passed, otherwise 0
Educational Objectives:	
Unknown	Coded 1 if the educational objective was not known, otherwise 0
Job	Coded 1 if the educational objective was job-related, otherwise 0
Cert/Degree	Coded 1 if the educational objective was to earn an award, otherwise 0
Transfer	Coded 1 if the educational objective was to Transfer, otherwise 0
Personal	Coded 1 if the educational objective was Personal, otherwise 0
Completer	Coded 1 if student earned an award, otherwise 0
Good Standing	Coded 1 if the student's last GPA>=2.00, otherwise 0
Employed	Coded 1 if the student was employed after leaving the college, otherwise 0
U_transfer	Coded 1 if the student transferred, otherwise 0
Retention	Coded 1 if the student was enrolled for a given Term, otherwise 0
Age	Age in years
Sem_1_GPA	First semester GPA
Cum_GPA	Last semester GPA
Sem_1_A_Hrs	First semester attempted hours

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Table 2: Frequencies and Descriptive Statistics

Variable Name	Frequency CCCCD	Frequency RCC
Gender:		
Female	925	458
Male	919	679
Part-time	768	804
Full-time	1,076	333
Ethnicity:		
White	1,536	967
Black	93	122
Hispanic	137	13
Asian	67	16
Residency Status:		
In-District	1,331	963
Other	513	174
Employment Status		
Employed	1,613	688
Other	231	449
Placement Test		
Pass	732	471
Fail	401	163
Other	711	503
Educational Objectives:		
Unknown	1,347	329
Job	36	96
Cert/Degree	133	
Transfer	299	391
Personal		261
Other	29	60

	Mean	Standard Deviation	Mean	Standard Deviation
Age	24.84	6.06	28.74	10.07
Sem_1_GPA	1.90	1.42	2.69	1.24
Sem_1_A_Hrs	10.29	4.09	6.16	4.25

Table 3: Retention Rates for the Fall 1997 Cohorts

TERM	CCCCD		RCC	
	# ENROLLED	% OF COHORT RETAINED	# ENROLLED	% OF COHORT RETAINED
FALL 1997	1,844	100	1,137	100
SPRING 1998	1,219	66	555	49
FALL 1998	844	46	333	29
SPRING 1999	694	38	295	26
FALL 1999	507	28	192	17
SPRING 2000	397	22	158	14
FALL 2000	319	17	120	11
SPRING 2001	271	15	127	11
FALL 2001			90	8
SPRING 2002			83	7

Table 4: Stepwise Multiple Regression Analysis with Retention as the Criterion for CCCCD

DV (Criterion)	IV (Predictor)	R	R Squared	F*
Fall 1997 to Spring 1998				
	Sem_1_GPA	.443	.196	448.9
	Pass Placement	.492	.242	293.8
	Fail Placement	.526	.277	234.9
	Part/Full	.534	.285	183.3
	Unknown	.539	.290	150.4
	Age	.542	.295	127.1
	Job	.543	.295	109.9
Fall 1997 to Fall 1998				
	Pass Placement	.385	.148	320.2
	Fail Placement	.429	.184	207.4
	Sem_1_GPA	.457	.209	162.0
	Unknown	.471	.221	130.7
	Part/Full	.477	.227	108.1
Fall 1997 to Spring 1999				
	Pass Placement	.388	.150	326.1
	Unknown	.430	.185	208.7
	Fail Placement	.447	.200	152.9
	Sem_1_GPA	.461	.213	124.2
	Part/Full	.468	.219	103.4
Fall 1997 to Fall 1999				
	Unknown	.368	.135	288.1
	Pass Placement	.433	.187	211.8
	Fail Placement	.443	.197	150.1
	Transfer	.452	.204	118.1
	Sem_1_GPA	.456	.208	96.5
	Cert/degree	.458	.210	81.2
Fall 1997 to Spring 2000				
	Unknown	.452	.204	472.9
	Pass Placement	.478	.228	271.9
	Transfer	.492	.242	196.2
	Cert/deg	.499	.249	152.7
	Fail Placement	.504	.254	125.0
Fall 1997 to Fall 2000				
	Unknown	.730	.533	2105.6
	Employ Status	.760	.578	1259.8
	Job	.774	.578	919.2
	Transfer	.779	.607	710.6
	Cert/deg	.780	.609	573.0
	Age	.782	.611	480.7
	Pass Placement	.783	.613	415.7

Table 4: Stepwise Multiple Regression Analysis with Retention as the Criterion for CCCCD (Cont'd)

DV (Criterion)	IV (Predictor)	R	R Squared	F*
Fall 1997 to Spring 2001				
	Unknown	.576	.332	916.1
	Job	.591	.349	493.3
	Employ Status	.597	.356	339.5
	Pass Placement	.601	.361	259.3
	Part/Full	.604	.364	210.7

*p<.001

Table 5: Stepwise Multiple Regression Analysis with Retention as the Criterion for RCC

DV (Criterion)	IV (Predictor)	R	R Squared	F*
Fall 1997 to Spring 1998				
	Sem_1_A_Hrs	.395	.156	207.0
	Placement test	.438	.192	50.8
	Other Intent	.450	.203	14.7
	Transfer Intent	.462	.214	15.9
	Age	.468	.219	7.7
	Sem_1_ GPA	.474	.225	8.3
	Part/Full	.481	.231	9.3
Fall 1997 to Fall 1998				
	Sem_1_A_Hrs	.354	. 126	161.1
	Placement test	.393	.154	37.9
	Sem_1_GPA	.407	.166	15.4
	Personal Intent	.415	.172	9.3
	White	.419	.176	4.1
Fall 1997 to Spring 1999				
	Sem_1_A_Hrs	.309	.095	118.3
	Placement test	.379	.144	63.8
	Sem_1_GPA	.389	.152	10.2
	Transfer Intent	.393	.155	4.0

*p<.001

Table 6: Logistic Regression Analysis of Retention for Spring 1998

Variable	CCCCD				RCC			
	B	SE B	Wald	Exp (B)	B	SE B	Wald	Exp (B)
Age*	-.02	.01	4.2	1.0	-.02	.01	7.1	1.0
Sem_1_GPA*	.64	.05	203.5	1.9	.20	.06	11.2	1.2
Sem_1_A_Hrs**	.07	.03	6.0	1.1	.13	.02	33.2	1.1
Placement test**	1.31	.16	66.9	3.7	.80	.15	29.3	2.2
Transfer Intent**					1.12	.40	8.0	3.1
Other Intent**					1.38	.40	12.2	4.0
Part/Full time**					.59	.21	8.3	1.8
-2LL		1758.73				1264.93		
Cox & Snell R Square		.28				.23		
Chi Square**		602.8				294.3		
Df		17				16		

*p<.05, **p<.01

Logistic Regression Analysis of Retention for Fall 1998

Variable	CCCCD				RCC			
	B	SE B	Wald	Exp (B)	B	SE B	Wald	Exp (B)
Age**					-.02	.01	7.1	1.0
Sem_1_GPA**	.31	.04	55.1	1.4	.32	.07	19.7	1.4
Sem_1_A_Hrs**					.14	.02	34.6	1.2
Placement test**	1.58	.14	126.8	4.8	.87	.16	30.5	2.4
Unkown Intent*	-.91	.45	4.1	.40				
Employ Status**	-.65	.21	9.9	.52				
-2LL		2062.4				1151.8		
Cox & Snell R Square		.23				.17		
Chi Square**		480.8				213.2		
Df		17				16		

*p<.05, **p<.01

Table 6 (Cont'd): Logistic Regression Analysis of Retention for Spring 1999

Variable	CCCCD				RCC			
	B	SE B	Wald	Exp (B)	B	SE B	Wald	Exp (B)
Sem_1_GPA**	.24	.04	30.8	1.3	.27	.07	13.9	1.3
Sem_1_A_Hrs**					.11	.02	22.1	1.1
Placement test**	1.56	.15	113.2	4.8	1.13	.16	49.0	3.1
Employ Status**	-.51	.21	6.1	.6				
Black*	-1.56	.77	4.2	.2				
-2LL		1983.3				1106.0		
Cox & Snell R Square		.22				.15		
Chi Square**		459.1				184.4		
Df		17				16		

*p<.05, **p<.01

Logistic Regression Analysis of Retention for Fall 1999

Variable	CCCCD				RCC			
	B	SE B	Wald	Exp (B)	B	SE B	Wald	Exp (B)
Sem_1_GPA**	.15	.05	10.2	1.2	.25	.08	8.9	1.3
Sem_1_A_Hrs* (** for RCC)	-.06	.03	4.4	.9	.09	.03	11.9	1.1
Placement test**	1.42	.17	70.6	4.1	1.04	.19	30.9	2.8
Part/Full Time*	.48	.24	1.1	1.6				
Unknown Intent**	-1.04	.43	5.9	.4				
-2LL		1761.9				913.7		
Cox & Snell R Square		.20				.09		
Chi Square**		407.1				111.3		
Df		17				16		

*p<.05, **p<.01

F igure 1

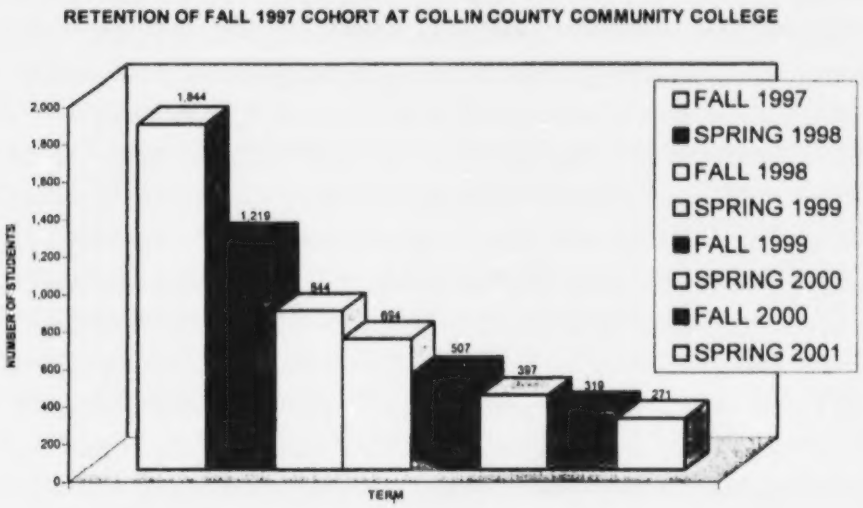

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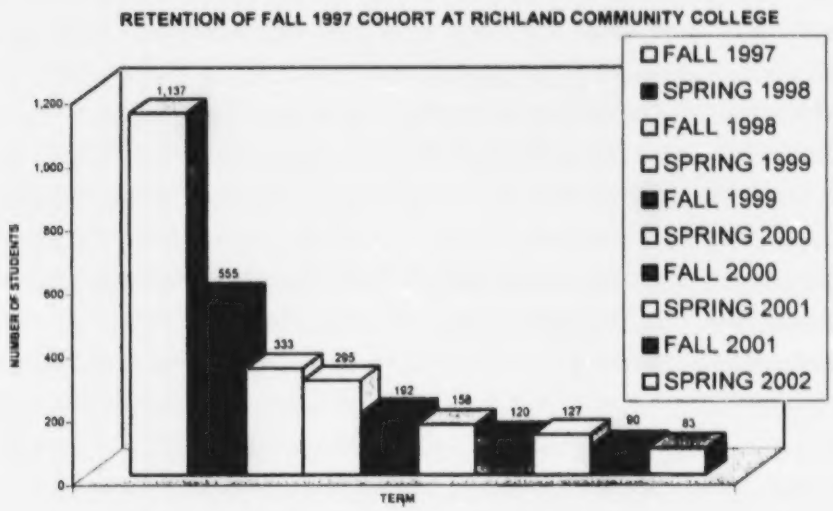
Figure 2



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